Supporting a virtual community of tutors in experience capitalising

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Abstract: Nowadays, Information and Communication Technologies (ICTs) are changing the way students learn. Many researches focus on the development of new forms of pedagogy and software for student learning. But ICT also involve changes in teachers’ roles, which are not yet well defined particularly for online tutors. In this paper, we present new ways for tutors to define their own ‘professional identity’, their functions and ‘good practices’. By providing a platform to develop Communities of Practice (CoPs) for tutors, we aim at giving them the possibility to share knowledge and experiences and to refer to those in their day-to-day practice. We detail the interface to classify and retrieve experiences stored as knowledge in a database.

Keywords: virtual communities of practice; online tutor; knowledge management system; KMS; information and communication technologies; ICTs.


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1 Introduction

With the development of technologies on the internet (e.g., forums, blogs or wikis), we observe the emergence of many web-based communities. Our research is focused on a specific type of community: Communities of Practice (CoPs), in which members share their practices to develop their knowledge and skills (Wenger, 1998). More precisely, we aim at developing a platform to support a global CoP of tutors, whom we define as educational actors who monitor learners in distance education.

In distance education, Information and Communication Technologies (ICTs) involve new learning techniques, which are used by companies and universities with online courses and training. But they also involve a new definition and new roles for teachers, particularly the tutor role. As we detail in the first part, this new role is not yet well defined and tutors have many functions to assume, often without any help. That is why we suggest to consider them in a global CoP composed of interconnected CoPs, in the frontiers of which they will exchange practices and experiences. By studying the specificities of the tutors’ role, we define requirements for a platform to support the CoP. We show the lack of adapted web 2.0 software applications to respond to all these requirements, and then we put forward an answer with the Tutoring Experience Capitalisation (TE-Cap) platform. The development is based on an iterative process which allows the refining of functionalities and the interface design. An important part of the work concerns the interface design, as we consider that a simple interface that is easy to use is necessary if we want tutors to be able to store and retrieve resources (messages, useful documents and web links). We present the results of an experiment conducted with 12 tutors with different backgrounds. The results lead us to make hypothesis on the requirements to support the participation among members of a CoP of tutors. We finally conclude with some questions incurred by the experiment results.

2 Research issues

The increasing roles played by the internet and especially by ICTs have changed the way we learn. Distance learning moved from a postal mail to an online mode. We emphasise the benefits of this new form of education for students, such course individualisation and flexibility in terms of space and time.
Houssaye (1988) represents the relations between learner, teacher and knowledge, under the shape of the ‘educational triangle’. This triangle brings out three educational styles (Faerber, 2002):

1. The teacher-knowledge relation corresponds to the traditional education with knowledge transmission
2. The teacher-learner relation defines the emotional and psychological relation between these two actors
3. The learner-knowledge relation represents the knowledge appropriation by the learner.

In traditional education, the teacher often has the role of ‘transmitter of knowledge’ and the learners absorb a quantity of information, among which little will be transformed into knowledge.

Distance learning is based on several educational theories. According to Piaget (1978) or Vygotsky (1986), learners build knowledge by their own activity and by interactions with others. This educational theory emphasises the fact that cognitive development results, on one hand, from the resolution of problems – from the process of cognitive imbalance followed by restructuring (the contribution of Piaget) – and, on the other hand, from social interaction (the contribution of Vygotsky) and in particular from collaboration between peers. In a constructivist approach, progress appears when learners in interaction disagree, the conflict being highlighted in the social interaction. It is named the ‘sociocognitive conflict’ (Doise et al., 1975). The constructivist theories developed by Doise and Mugny (1984) consider learning as a personal experience towards knowledge, influenced by the social context in which it takes place. According to the socioconstructivist approach, interactions between learners play a dynamic role in individual learning.

Based on these theories, Faerber (2002) adapts the ‘educational triangle’ (tutor, learner, knowledge) from face-to-face education to distance learning through a virtual environment. He adds two new components:

1. The group, which he defines as an established set of learners and teacher(s) in interaction, sharing common objectives
2. The virtual environment, in which and by which interactions happen.

The environment offers tools which support interactions between actors or interactivity with cognitive contents. Thorpe (2002) also considers the ‘learning group’ as a fourth component of the traditional triangle:

“The potential to create extensive dialogues and interchanges electronically means that online teaching is often prioritising the learning group as the chief resource for learners and the focus for the tutor, rather than the needs of each individual learner, though these too can be accommodated if the pedagogical design supports that.” (p.114)

In that case, other resources are either web resources or lessons conceived in advance. “It is the purpose of the online interaction to use the learners themselves as a resource, and to build on their experience, reading and perspectives” (p.112). Berge and Collins
(1995) also promotes socioconstructivist learning and emphasises that learners have to learn by themselves, by participating in the task, by using the resources which they need and by applying their own learning style.

So, ICT-based distance education offers many new possibilities, but, at the same time, it involves a new definition and new roles for teachers, the latter being divided into two distinct roles: the instructional designer and the tutor. Course supports and contents are created by the instructional designer, who is an expert on the teaching area. Contents are then delivered to students, often without any interaction with the instructional designer. Tutors usually interact with learners to assist them in building knowledge and competencies and to assess them. A single person can play both roles, but each role does not intervene at the same moment in the course.

In the literature, tutors are named differently, according to the functions assigned to them: moderator, facilitator, online tutor, online moderator, e-moderator, coach, distance education mentor, etutor, etc. It is thus very difficult to exactly determine the tutors’ role and what the functions assigned to them are. Furthermore, the support brought by tutors to learners requires them to adopt different roles depending on the type of learners’ tasks (for example, individual or collaborative work) (Denis et al., 2004). Lentell (2003) states:

“Tutors need to have knowledge and a broad conceptual understanding of their field. They have to be effective listeners and communicators, to be a coach, facilitator, mentor, supporter and resource. They have to listen, to shape, to give feedback, to motivate, to direct, to appreciate – broadly to be developmental and problem solving.” (p.74)

Denis et al. (2004), inside the Learn-Nett project, assign seven different roles to the tutor: a content facilitator, a metacognition facilitator, a process facilitator, an advisor/counsellor, an assessor, a technologist and a resource provider.

The implementation and the progress of distance-learning activities are modified because they are mediated through a virtual environment. The literature reports difficulties of communication due to the distance and tools used. According to Feenberg (1989, p.28), the management of a group is “unusually complex because of the difficulty to manage an organized activity of a group in a written environment”. Difficulties also appear at the interaction level between learning actors, which impacts on social links. To solve the inherent difficulties of computer-mediated communications, the role of moderator is key to manage the interactions. So, Feenberg (1989, p.33) asserts that a strong leadership is needed to compensate for the lack of the verbal indicators of communication. Mason (1991) also insists on the importance of leadership and directivity in interactions management, considering them a sine qua non condition of the success of an electronic conference. According to Dillenbourg (1999), tutors are ‘facilitators’ because they have to assure a minimal educational intervention to guide the learning group in a productive way.

Thorpe (2002) also highlights the importance for the tutor to adapt learning situations to learners by taking into account their needs, objectives and learning styles:

“The substance and the meaning of online activities is determined by the particular students who work together online. Their tutor may play a very direct role also, helping shape these interactions, sometimes designing the activities themselves in order to suit particular needs of the current group.” (p.105)
According to Casey et al. (2005), teachers should be able, as they improve their educational expertise, to teach by adapting to circumstances and contexts in order to make students’ learning possible.

Hence, to sum up, tutors are asked to assume a lot of functions. They have to listen, to give feedback, to motivate, to guide learners, to organise group activities, to manage interactions and to adapt activities to learners. They also have to be coaches, content facilitators, mentors, advisors, assessors, technologists and resource providers. In this context, the tutors’ work is not a simple activity because:

- The instrumentation of tutor activity in distance-learning environments is still little developed (Dufresne et al., 2003).
- They have no means to monitor the changes in their activities. It is necessary to make them aware that traditional tutoring cannot become ‘online tutoring’ by modification or adaptation. It requires a fundamental restructuring.

About the first point, an important problem is that there is no tracking of the tutors’ work (decisions taken, events that occurred, scenario configuration or personalisation, quality of the knowledge-building process, etc.). Therefore there is no possibility of sharing practices and reusing them in other contexts. There is much research on the characterisation and the standardisation of learning activities in order to assist instructional designers in scenario designing. But tutors prepare their own pedagogical contents for their students, and there is currently no possibility of reusing and sharing them. Tutors do not use ‘reusable’ content, usually called learning objects, because they would like to be able to have access to contextual information on resources to evaluate and reuse them.

As a result, tutors do not really know what they have to do and what the best way to do it is. According to Casey et al. (2005), “there is a growing realisation that it is not very sensible to invest in learning technology and not change the way we work”. ICTs can improve pedagogical practices, but the problem is that tutors do not always know how to use them in their educational activities (Michel et al., 2007). For the course to be effective, McPherson and Nunes (2004) insist on the importance of both the tutor’s role and the instructional designer’s role:

“The focus is frequently placed on design and developing information and communication technology (ICT) based environments and insufficient attention is given to the delivery process. These efforts have little chance of succeeding without a tutoring team that has appropriate online tutoring skills necessary to explore and maximize the designed environments.”

So, ICTs not only change the way students learn, but also the way teachers work. We study how ICT can contribute to the recognition and definition of a specific role of the tutors. Today it is advisable in education to ask the question of how ICTs, having modified the teacher’s role, can now contribute to define it and help ‘tutors’. So, our research purpose is to bring a solution to solve the problems for tutors defined in this section, which are:

- lack of a professional identity
- lack of help in their day-to-day practice
- lack of practice sharing.
3 Tutors in a virtual community of practice

Casey et al. (2005) assert that “good teaching […] is reflective and reflexive about the experience of teaching and incorporates lessons learnt from the experience of teaching into teaching practice”. Tutors must examine their own work. They also have to confront their ideas in order to determine ‘good practices’, and so have the possibility to refer to these. These ‘good practices’ will be a help in assuming all the functions that we have enumerated in the previous section. According to the socioconstructivist approach of learning, collaboration between tutors can help each one to build new competencies and reinforce existing ones. That is why we suggest that tutors develop their competencies and define their work and good practices in the context of a CoP. We now describe how this approach can contribute to solving all the problems previously defined.

3.1 Virtual communities of practice

According to Wenger et al. (2002), CoPs are “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis.” They operate as ‘social learning systems’ (Snyder et al., 2004) where practitioners connect to solve problems, share ideas, set standards, build tools and develop relationships with peers. Organisations and researchers use a variety of terms which refer to CoPs: knowledge communities, knowledge networks, learning networks, etc. In order to situate a CoP in reference to all these terms, Snyder et al. (2004) give a definition: “A community of practice is a particular type of network that features peer-to-peer collaborative activities to build member skills.”

Other important aspects of CoPs are pointed out by Scarbough and Swan (1999): “Socially, CoP are the fabrics of knowing as members of CoP acquire communal identity around a shared passion, relationships, roles and ways of intermingling common knowledge, practices and approaches.” This definition highlights the social aspect of CoPs. Members of a CoP, by interacting around a same subject, define common practices and create an identity which is common to all the members.

A virtual CoP is a specific kind of CoP, resulting from computer mediation. According to Koh and Kim (2004), a virtual community is “a group of people with common interests or goals, interacting for knowledge (or information) sharing predominantly in cyberspace”. Relationships in virtual CoPs are now software mediated (e.g., forums, blogs or wikis) and generally classified by topic of interest. Fernback and Thompson (1995) pointed out the need for a virtual CoP to have “a specified boundary or place (e.g., a conference or chat line) that is symbolically delineated by topic of interest.”

In the context of our study, we take up these main characteristics of virtual CoPs:

• Members share an interest, roles, a concern, a set of problems or a passion.
• They aim at building up the members’ skills and deepening their knowledge and expertise.
• Members acquire a common identity.
• They need a specified boundary or place.
• Practitioners define common knowledge, practices and approaches.
By putting these characteristics together, we notice that developing an environment
to bring tutors to create a virtual CoP could be a solution to the problems highlighted in
the previous section. CoPs give the possibility for tutors from different backgrounds
to define and acquire a professional identity, to share and develop their knowledge,
competencies and expertise, and to define ‘good practices’ to apply in their work. But we
now have to define the organisation for a specific CoP of tutors, and the tools to support
their interactions.

3.2 Tutors in communities

There are tutors in many countries in the world and they all have their own practices and
their own background. Tutors usually have another job and do tutoring as an ‘extra’,
along with their job. Some of them are teachers in university, researchers, company
employees, etc. So they have different competencies and expertise to share with others
and to acquire by participating in a CoP. According to McPherson and Nunes (2004),
for successful online learning, tutors must have subject matter expertise and technical
skills, and also be educationalists with pedagogical, information and communication
skills that are necessary to manage and facilitate online learning. But, due to their various
backgrounds and the lack of training, only a few tutors have all these requirements.
That is why it is important to favour the development of CoPs in which tutors will
improve their expertise and competencies. Since “communities are emergent” (Brown
and Duguid, 1991), we cannot ‘create’ CoPs, but we could provide the infrastructure in
which they will emerge.

There exist several web-based CoPs of teachers limited by the borders of the
institution to which they belong, generally supported by Course Management Systems
(CMSs) like Blackboard (West et al., 2007). Pashnyak and Dennen (2007) also studied
the case of a virtual CoP of teachers who share knowledge and exchange opinions with
the support of blogs on a K-12 environment. In this case, the interactions are not limited
to an institution but they are not supported by a specific environment for a virtual CoP.
Ziovas and Grigoriadou (2007) showed, with an experiment with three CoPs related to
ICTs (a learners’ community, a researchers’ community and a teachers’ community), that
people can better introduce the practices of one community to another when they refer to
and negotiate the meaning of relevant boundary objects (ICT-based educational material
served as the mediating objects around which members of the different practices crossed
the boundaries of their communities and were brought into mutual engagement).

We base our work on the continuous process of negotiation of meaning introduced
by Wenger (1998), which takes place in CoPs and supports knowledge creation and
learning. This process involves the interaction of two complementary processes:
participation (“the social experience of living in the world in terms of membership in
social communities and active involvement in social enterprises”, p.55) and reification
(“the process of giving form to our experience by producing objects that congeal this
experience into ‘thingness’”, p.58). In our research, we consider a global CoP of tutors
as a constellation of interconnected CoPs (Wenger, 1998, p.127), so as to support
and amplify the process of knowledge creation by the negotiation of meaning in the
boundaries of these CoPs. So we have to differentiate different types of CoPs of tutors
and to determine the objects and the actors who will allow negotiation in the boundaries
of these CoPs. So as to define different types of CoPs of tutors, we referred to the literature. Regarding, on the one hand, the tutor’s role and, on the other hand, the characteristics of CoPs, we distinguish three types of CoPs of tutors (see Figure 1).

**Figure 1** CoPs of tutors as a global community (see online version for colours)

### 3.2.1 Tutors who monitor the same type of activity

As we said previously, there are more and more activities offered to learners in distance learning: project-based learning, case study and so on. These activities can be divided into several distinct stages, for example, individual or collaborative stages, distance or face-to-face stages. So, tutor functions vary according to these different types of stages. Communities can be created for tutors who supervise the same type of activity, in order to improve their practice and to share their experiences.

### 3.2.2 Tutors who have the same function in a course

As we detailed in Section 2, different functions are assigned to tutors according to online courses, training situations, kinds of activities or university. In practice, a tutor does not assume all these functions and is not necessarily aware of each one, but as we develop a platform to support a global CoP of tutors, we have to consider all possible functions. We sum up these functions:

- an assessor – The tutor assesses the learning group’s productions and activities, and the competencies and knowledge acquired by a learner.
- an intellectual catalyst – The tutor incites learners to have individual reflection, to express themselves publicly and to develop their ideas.
• a moderator of interactions – The tutor develops and regulates interactions (Dillenbourg, 1999) and sets up the group dynamics.
• a provider of psychological and emotional support – The tutor is a human mediator to motivate, encourage, stimulate learners and create a friendly learning environment.
• a learning facilitator – For a given learning situation, tutors can provide documents or advise adapted resources to guide learners and give them feedback on the assessment.
• a provider of technical support – The tutor helps learners to get acquainted with tools and provides technical support in case of trouble.
• a pedagogical architect – The tutor has scope to adapt the learning situations created by the instructional designer to the learners’ needs and characteristics.

3.2.3 Tutors who teach the same subject matter

In order to develop their knowledge and competencies in their subject matter, it is important to provide tutors with topics. Furthermore, the tutor’s role can vary according to the subject matter, e.g., computer science, humanities or corporate knowledge management.

So, we can see that CoPs of tutors can be defined by a university or a company. They should be defined by common interests and common practices: “CoPs are important as they weave the organization around competencies without reverting to functional structures” (Pan and Leidner, 2003). A tutor can participate in a specific community or in two or three types of CoPs. The advantage of defining several communities around shared practices is to create more knowledge and develop more interactions than in a global community (Pan and Leidner, 2003). Furthermore, within an organisation perceived as a set of communities, not simply of individuals, separate community perspectives can be amplified by interchanges among communities (Brown and Duguid, 1991).

In the next part, we present the TE-Cap platform we developed. The development was based, on the one hand, on our view of tutors’ activities so as to determine the functionalities they need on the platform and, on the other hand, on the results of interviews that we conducted with several tutors in different institutions.

4 Development of the TE-Cap platform

4.1 Requirements for a platform to support a virtual CoP

According to a sociotechnical approach, Koh and Kim (2004) distinguish two important points in order to develop CoPs: usability and sociability. Concerning sociability, William and Cothrel (2000) suggested three virtual community managing strategies: member development, community asset management and community relationship management. More specifically, a clear vision, opinion leaders, offline activities,
rules/roles and useful contents based on expertise are required to run a virtual community intelligently. Preece (2001) highlights three components to support the sociability of a virtual community:

1. purpose (a community’s shared focus on an interest, need, information, service, or support)
2. people (who interact with each other in the community and have individual, social and organisational needs)
3. policies (language and protocols that guide people’s interactions and contribute to the development of rituals that bring a sense of history and accepted social norms).

In addition to these common social characteristics of successful communities, Whitaker and Parker (2000) emphasise technology factors such as consistent and compatible software, which are very important in the context of a virtual community. According to Preece (2001), four usability components are particularly concerned with the software’s role as a medium and a place for social interaction:

1. dialogue and social interaction support (the prompts and feedback that support interaction)
2. information design (ease to read and understand information)
3. navigation (ease to move around and find information)
4. access (requirements to download and run online community software must be clear).

Pan and Leidner (2003) looked at the use of information technology to link communities in order to create global knowledge sharing. They drew conclusions on the implementation of a Knowledge Management System (KMS) in a world company. They assure that it is important to create a common-knowledge CoP as opposed to a single global community or multiregion forum arrangement. They emphasise the need to provide multiple channels/forums for diverse knowledge-sharing needs and preferences.

Von Krogh (1999) distinguishes three stages of KM:

1. capturing knowledge
2. sharing and transferring knowledge
3. generating new knowledge.

To accomplish these stages, we suggest the TE-Cap platform to facilitate the capturing of tutor’s knowledge (their experiences, useful documents and web links). The knowledge sharing and generating will be the result of the activity of CoPs. Since “the structural process that is associated with community is communication” (Fernback and Thompson, 1995), we need to provide CoPs with suitable software to develop interactions.

To summarise, we can distinguish several requirements for a platform to support a virtual CoP of tutors, considered as a constellation of CoPs:

- Put forward a specific virtual space for each type of community (function, activity and subject matter communities), in which it can define its own identity, with subjects and vocabulary bound to the practice of the members.
Supporting a virtual community of tutors in experience capitalising

- Offer tools to favour the exchange of knowledge across the boundaries of communities.
- Facilitate the reflexivity of the members on their practices and lived experiences to develop their skills, knowledge and expertise.
- Facilitate the location of the sources of expertise and the skills identified within the community.
- Offer a tool to store all the knowledge produced by the global community, whether it is a result of interactions between peers (reflections, ideas, tools) or an individual contribution (testimony, document, interesting web link).
- Offer a tool to search the stored information which can be relevant for members in relation to their practice.

Considering these requirements, we compare them with those of KMSs and web 2.0 social software applications.

4.2 Web 2.0 technologies: the answer to the platform requirements

KMSs are not convenient for a global CoP which is not limited by the borders of an institution or a company. CoPs are generally limited by the framework of the company they belong to and thus supported by KMSs developed by this company, as presented by Pan and Leidner (2003). First, these systems are imposed by the company and it is the only means available for the employees to communicate and exchange knowledge. Secondly, these systems use web tools to support the activities of the company in whose CoPs the members are already involved, whether it is within an organisational entity or beyond the organisational borders. In this case, members already have a feeling of membership in the company. But in our case, we address a global CoP of tutors who do not necessarily belong to the same teaching institution or university. The most important problem to solve, then, is to promote interactions between tutors out of any framework imposed by an organisation. The main point is to make tutors aware of common needs and practices.

That is why we chose to develop a platform which rests on web 2.0 principles and is composed of existing web tools available for communities like subscriptions, individual profile pages, blogs, file sharing, document repository, presence indicators or member directories (Wenger et al., 2005). Some web 2.0 applications like Facebook¹ or MySpace² are social networking services that “connect you with the people around you” but they are centred on the members’ identity or interests. Our platform aims at connecting tutors – according to the context of their work, the functions they assume in the course or the subject matter in which they are experts – with the possibility to locate interesting sources of expertise and skills identified within the community. Furthermore, the purpose is not only to favour interactions but also to create a database on tutoring experiences. An experience could be what tutors set up in their course and whether it works or not. For example, a tutor can adapt difficulties to a specific learner and improve the quality of his/her learning. It must be an interesting testimony for other tutors.

TE-Cap is based on a principle that O’Reilly (2005, p.3) states about web 2.0: “Without the data, the tools are useless; without the software, the data is unmanageable.” For him, every significant internet application to date has been backed by a specialised
database: Google’s web crawl, Yahoo!’s directory (and web crawl), Amazon’s database of products, eBay’s database of products and sellers, etc. Like eBay, TE-Cap’s product is the collective activity of all its users (tutors); TE-Cap grows organically in response to its users’ activities. In order to support the sociability and usability necessary for a CoP to live, the platform interface has to be adapted to the specific activity of tutoring. The existing applications only bring solutions for communities of interest where the members do not come to look for very precise information. There are also commercial applications like eBay or Amazon where the search is precise but centred on a product.

We want tutors to store and retrieve resources (messages, useful documents and web links) and especially experiences in the context they are concerned with. But, to be effective, these actions must be performed quickly, because tutors do not have enough time for this. That is why we have to design a simple interface that is easy to use and to learn as advised by Wenger et al. (2005). O’Reilly (2005) also concludes on the importance of rich user interfaces: “We’re entering an unprecedented period of user interface innovation, as web developers are finally able to build web applications as rich as local PC-based applications.”

One of the important points of the interface is to make the vocabulary evolve as tutors use the platform. More and more web applications use folksonomy (in contrast to taxonomy), “a style of collaborative categorization of sites using freely chosen keywords, often referred to as tags” (O’Reilly, 2005). Nevertheless, within the framework of a CoP of tutors, we consider the necessity to provide a classification to store data and, especially, experiences. In this way, data could be retrieved in their context. Tagging systems work well for communities of interest where users are going to navigate in the application with no very precise purpose in mind, but it is not really adapted to a CoP where users look for resources bound to work experiences. Therefore, we decided to develop a platform with an attractive human-computer interface that allows structuring without a too-high rigidity.

4.3 **TE-Cap functionalities**

This subsection presents TE-Cap functionalities, which are detailed in Garrot et al. (2007b). In the next subsection, we detail the interface used to store and retrieve experiences and other resources, which is at the heart of our approach to a global CoP of tutors as several interconnected communities. An experience could be what they have set up in their course and whether it works or not.

4.3.1 **Members’ profile and interactions support**

We previously showed the importance for a CoP to facilitate the location of the sources of expertise and the skills identified within the community. For that purpose, we make available on the platform the profile of each tutor, which is composed of four parts:

1. identity profile (country, job, age, etc.)
2. professional and university backgrounds (tutoring experience, training to be a tutor, etc.)
3. profile in relation to the monitored training courses (disciplines, institution or company, etc.)
4. competencies (pedagogical, technical, subject matter expertise, etc.).
The most important point is to allow a novice tutor to locate an intermediate or expert tutor whom he/she can ask for help. The mutual aid between the members of a CoP is one of the foundations for the skills development of everyone in it.

The platform offers two possibilities to support interactions:

1. sending an e-mail to a member of the community from its profile – So, if a tutor is interested in the profile of a member, he can choose to send him/her an e-mail for private communication. This tool allows getting in touch with members and being able to develop relations between peers outside the platform space.

2. writing a message to which it is possible for the other members to answer – Before message validation, the writer has to indicate his/her ‘intention’ when writing the message: giving a testimony, asking for help or discussion. This choice brings the writer to think about the message content and so, more generally, to reflexivity on the practice to which he/she is testifying. It also directs other members in their answers. After message validation, the writer is directed to an interface to classify the message according to several subjects (we present the interface in detail in Section 4.3.2). This tool has the same communication mode as forums but messages are classified in a more structured way, according to the subjects associated with the community practices.

So, in this first cycle of development, we wished to offer only the communication tools necessary for the interactions between members, by distinguishing between a tool for getting in touch with peers and a tool to support the exchange of experiences classified by subject, according to the writers’ intention.

4.3.2 Personal space for information management

The platform offers diverse tools assuring the creation, sharing and storage of the information brought or produced by the community. When tutors are connected, they can choose to manage their messages (see Figure 2), their documents or their web links. For each of these features, the platform shows the list of resources that a tutor has already proposed and the number of times they were viewed by the members of the community. The opportunity is given to propose a new one. This conception of the platform allows tutors to manage the information they bring to the community, as well as the interest aroused by these in the other members.

4.4 Design of the interface for knowledge searching and retrieval

4.4.1 Evaluation by tutors of an early prototype interface

We conducted interviews to get tutors’ opinion on an early prototype. The interface we designed took the shape of a matrix. We based the design of this interface on the three types of CoPs of tutors that we distinguish in Section 3.2 (function-based, activity-based and subject matter-based communities). So, when accessing the interface, tutors could store experiences according to a function or a specific phase of the course (see Figure 3).
The first row corresponds to several phases of a course, which are parameterised activities. When accessing the matrix for the first time, the tutor determines the parameters (illustrated in a cell) of each particular activity in his/her course:

- individual 🧑 or collective 🧑 activity
- at distance 📚 or in presence 🗣️ activity
- synchronous 📩 or asynchronous 📨 activity.
The first column of the matrix lists the different tutor functions which we presented in Section 3.2.2. Figure 3 illustrates a case study which has four activities. The tutor can click on different cells to store or search an experience. For example:

- 1 is a cell in the intersection of a column and a row. The tutor accesses experiences which correspond to the function of motivational support and the second phase of the case study (cause searching).
- 2 is a cell in the first column. The tutor accesses all the experiences linked to the motivational support function.
- 3 is a cell in the first row. The tutor accesses all the experiences related to the second phase.

The number in each cell indicates the number of experiences which correspond to a specific function and an activity type. The darker the colour of the cell, the more stored experiences it has. So, with this matrix, tutors can store and access very quickly the experiences which concern them.

We conducted seven interviews with tutors of different institutions, with different backgrounds: two tutors from the FORSE campus of Lyon (educational sciences), one tutor from the FORSE campus of Rouen (educational sciences), two tutors from the VCIel campus (computer science), one tutor from DESS UTICEF (use of ICT in education and training) and one educator from GRETA of Lyon (training to set up blended learning). We interviewed them about the interface we detailed previously. By analysing the transcription of interviews, we distinguished two types of results concerning the interface: one related to the matrix (division into functions and activities) and one related to our view of tutors as a constellation of three communities.

Concerning the matrix, several tutors raised the difficulty of classifying an experience in a cell. We notice that they feel forced to have to fill in all the cells, but they do not think they can a priori put a lot of information in them: “I do not see what I could put inside in fact.” More precisely, the division of the scenario into activities seems interesting because it requires less reflection about the situation. In fact, it reduces the complexity of the scenario and so it does not require a global approach to the whole scenario. But the division into several tutor functions is not relevant because tutors are not aware of all the functions that constitute their role and particularly during an activity of the scenario. It requires too much reflection on their day-to-day practice (it is not easy to know if an experience concerns a precise tutor function). Furthermore, it does not really hold interest for tutors to know which role they are playing. To conclude, it seems to be easier to find information than to formulate an experience corresponding to a cell.

Tutors did not seem to be satisfied with the three types of tutor CoPs we distinguished (function-based, activity-based and subject matter-based communities). In fact, they asked, why only these three CoPs? For example, tutors have problems to solve concerning a particular type of learner (for instance, someone in difficulty relating to the group) or relating to the institution to which they belong. We thus questioned our division into three communities and we tried to see all the subjects in relation to the practice of tutoring. As a result, we developed a model of the factors in relation to the practice of
tutoring, based on the vocabulary used by tutors during interviews (Garrot et al., 2007a). This model was adapted to conceive the interface of the TE-Cap platform to store and search experiences.

In conclusion, we can notice that the interface of the early prototype was too difficult to use by tutors in their practice, particularly to store their experiences. The matrix, which requires tutors to choose a cell, is too precise and we have to give tutors more freedom. Furthermore, the three types of CoPs of tutors that we distinguished did not seem to be relevant: there can be other communities and those we identified may not be the most relevant. That is why we designed another intermediate interface, in order to determine the most relevant types of communities of tutors in relation to their practice, and the most adequate interface with regard to the results of the experiment.

4.4.2 Intermediate interface of TE-Cap for storing and searching experiences

For this experiment, we designed an intermediate interface in the shape of a dynamic tree view, with hierarchically classified subjects (see Figure 4). These subjects were identified during the interviews and the classification was based on a model of the factors in relation with the practice of tutoring. When using TE-Cap, a tutor accesses this interface in two cases:

1. when sending a message, a document or a web link – The tutor has to choose the corresponding subjects in the dynamic tree view. For example, if a tutor asks for help because he/she does not know how to react in front of a learner in trouble within a work group, he/she can check the box ‘In trouble’ in the subject ‘Position inside the group’ in the part ‘Concerned learners’ (see Figure 4).

2. when searching for any resources relating to tutoring – As we detailed in the platform functionalities, a tutor can consult and add interesting resources that he/she has found to his/her favourites. Furthermore, he/she can choose to react to a message, to bring assistance or to pursue a discussion, for instance.

This intermediate interface is at the heart of the participative design of the TE-Cap platform. By experimenting with this interface, we observe which categories (and how many) are chosen to store resources and which ones are chosen for the search. Tutors can also suggest new categories to be recorded, which may then highlight useless ones. This approach aims at providing results about which types of communities of tutors we can distinguish (with regard to the categories chosen and suggested), and so aids in the design of the final interface of the platform. Indeed, we aim at developing an interface which provides a space for each type of community.
5 The experiment with TE-Cap and the results

The experiment provides qualitative information about the use of the platform to evaluate its usability and utilisability. That is why this experiment involved the participation of no more than 12 tutors from six countries: Costa Rica, Senegal, Algeria, France, Tunisia and Canada. We chose tutors from different institutions and disciplines (e.g., educational science, computer science, mathematics, pedagogy, project management). They used the platform for two months and tried to integrate it into their practice. The experiment finished in the middle of March 2007. We analysed use traces by focusing on the response to the tutors’ needs in terms of tools to favour interactions and the interface to store and retrieve information. The aim of the experiment is not to draw definitive conclusions, but just to make hypotheses so as to make the TE-Cap functionalities and interface evolve and thus to correspond to users’ behaviour when using TE-Cap.

We observed the subjects used by tutors to classify and search experiences, so as to determine the main domains involved in the tutoring practices. By observing the categories used by tutors in the classification of the interface, we wanted to decide which types of communities were relevant. As a result, we noticed the following behaviour:
• There were fewer interactions than we supposed: only six messages posted and an average of three answers per posted message.

• When classifying a message, some tutors marked all the boxes (each corresponding to a main category). We suppose that they made this choice to be sure that their message would be retrieved and so read by the other members.

• On the other hand, some tutors marked only one box. We suppose that they did this so that the classification of the message would be fast. Maybe they chose a category because they were obliged to, but this category did not seem to correspond to the posted message.

• Few supplementary categories were suggested (only two). Tutors mainly used the existing categories to classify their messages. We suppose that tutors do not take time in their practice to think about other categories.

• Only two tutors (once to classify a message and once to search) clicked the icons (+ sign) to see subcategories, and only twice (once to classify a message and once to search). This observation joins a previous result, which is that tutors do not spend time to find the categories which correspond best to their message testifying of an experience or searching for interesting resources.

• Few searches were made (18 by only three tutors). Our hypothesis is that tutors do not have time to spend searching for information. They want to be informed of the last messages posted, last documents or web links and last comments made on a message, without having to connect to the platform.

With regard to the theory of CoP developed by Wenger (1998), we think we have privileged the reification of knowledge over the participation of the community. We have not offered enough possibilities to easily access these resources and to react to them. More precisely, the interface to search the experiences was not adapted to the tutors’ activity. For example, the tutor has to search for messages which have been posted so as to respond to them. So the link between reification and participation was not emphasised enough by this first prototype of the platform. The usability of the interface to classify and search resources is not adapted enough to tutors, so the interface has to be modified and improved.

We are currently making the platform evolve so as to better meet tutors’ needs and particularly to increase the members’ participation. The development is directed in two axes: sending information directly to the community members to facilitate the participation (by using the syndication feed technology, i.e., RSS technology) and personalising the interface to each tutor, according to the various types of CoPs he/she wants to belong to. This new prototype is currently used in real conditions and as an experiment, with a nonlimited number of participants.

6 Conclusion and future direction

We studied a new way to use ICTs in education in order to help tutors to learn and develop competencies and expertise in the context of CoPs. As members of CoPs, tutors can share their experiences and define good practices. All this knowledge was easily
Supporting a virtual community of tutors in experience capitalising accessible through our platform, which had few functionalities for the first experiment. The main aim was to observe tutors’ behaviour with the offered functionalities and principally with the interface to classify and search experiences and other resources (messages, documents and web links). We provided tutors with two different interfaces (one during interviews and the other for the experiment with TE-Cap) but neither was totally adapted to their needs in the context of their activity.

As a result, we developed a new prototype of TE-Cap to improve tutors’ participation within the platform (by using RSS feeds). We also made the link between the users’ profile and the interface by using AJAX, which is a key component of web 2.0 applications for rich user interfaces. The experiment results led us to ask some questions: Is it because tutors were all from different institutions that there were few interactions? Do interactions have to be born at a local level (i.e., the institution), and then be raised to a global level (beyond institutions) and finally to come down again to the local level (in another institution)? The current experiment will address these questions.

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References


Supporting a virtual community of tutors in experience capitalising


Notes

1 http://www.facebook.com/

2 http://www.myspace.com/